

### ABSTRACT OF THE DISCLOSURE

An apparatus and method for determining a physical parameter affecting an optical sensor or a number of sensors in a network. The apparatus uses a narrow linewidth source at an  
5 emission wavelength  $\lambda_e$  and an arrangement for varying the emission wavelength  $\lambda_e$  of the radiation. An analysis module with curve fitting is used to generate a fit to the response signal obtained from the optical sensor. The physical parameter is determined from the fit rather than from the  
10 response signal. The apparatus can be employed with Bragg gratings, etalons, Fabry Perot elements or other optical sensors.